
The Endocrine System

Unit 4.1

4.1 Journal

Do you remember the last time you had “butterflies” in your stomach or a racing heart because of an upcoming performance or game? Describe the situation. Do you think that reaction was helpful or harmful for your situation? Explain.



Objectives

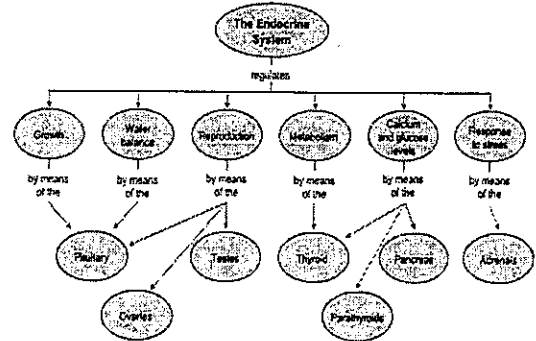
- Describe the general roles of the endocrine system
- Identify the glands of the endocrine system

What is the Endocrine System?

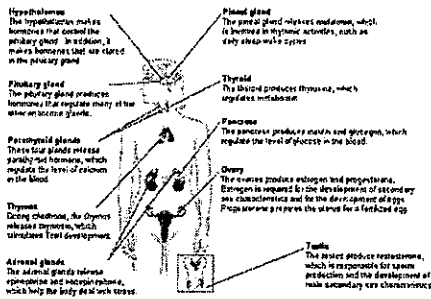
- The endocrine system is the collection of glands that produce hormones that regulate processes like:
 - Metabolism
 - Growth and development
 - Tissue function
 - Sexual function
 - Reproduction
 - Sleep
 - Mood

Endocrine Glands

- An **endocrine gland** produces and releases chemical substances that signal changes in other parts of the body.
- Substances called **hormones** are released directly into the bloodstream where they are carried throughout the body
- Hormones are like "chemical messengers" - when they reach target cells they can turn on, turn off, slow down or speed up activities of the cells
 - Adrenaline causes faster heartbeat, tense muscles, and increased alertness (fight-or-flight response)

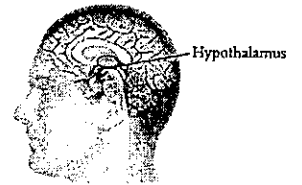


Functions of the Endocrine Glands



Hypothalamus

- Located in the brain
 - Part of the nervous system
 - Controls body temperature
 - Feelings of sleep and hunger
 - Part of the endocrine system
 - Controls body's water levels
 - Produce "releasing hormones" - signal hormones to be released from another region of the brain



Pituitary Gland

- Signaled by the "releasing hormones"
- Controls many of body's functions
 - Growth
 - Reproduction
 - Metabolism
- Can also act as an "on" switch for other glands
 - Ex: Pituitary signals thyroid to release hormones essential for metabolism
- Or controls cell activities directly
 - Ex: Growth hormone is released to regulate your growth from infancy to adulthood



Reproductive Glands

- Males have two testes; females have two ovaries
- Reproductive glands work at low levels until about age ten when puberty begins
- **Puberty** - the period of sexual development during which a person becomes sexually mature and physically able to reproduce

How the Endocrine System Starts Puberty

- Hypothalamus → Pituitary → Reproductive glands
(Releasing Hor.) (LH, FSH) (Testosterone or Estrogen/Progesterone)